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Teachers' Retirement System



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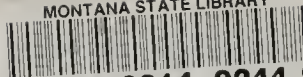
BIENNIAL REPORT

FISCAL YEARS ENDED JUNE 30, 1992 AND 1991

Marc Racicot, Governor

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TEACHERS' RETIREMENT SYSTEM



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STATE OF MONTANA

The Honorable Governor Marc Racicot
Capitol Building
Helena, MT 59620

Dear Governor Racicot:

In accordance with 19-4-201 MCA, the Teachers' Retirement Board is pleased to submit to you the Biennial Report for the period ending June 30, 1992, the 55th year of operation of the system.

The Montana Teachers' Retirement System was established in 1937 to provide retirement benefits to Montana's educators. This report will reflect that the system is meeting its mission of maintaining a financially sound system while providing the broadest and fairest possible range of retirement, disability, and survivor benefits for members, retirees, and their beneficiaries. The promise of adequate retirement benefits with sound funding is one of the strongest factors in retaining the career teacher. The Montana Teachers' Retirement Board looks forward to continuing to serve the educators of Montana.

On behalf of the Board, I thank the staff, the Board's advisors, and the many people who continue to work diligently to assure the successful operation of the system.

Sincerely,

A handwritten signature in cursive script, reading "David L. Senn".

David L. Senn
Executive Director

DLS:djw

TABLE OF CONTENTS

	PAGE
RETIREMENT BOARD, ADMINISTRATIVE STAFF AND PROFESSIONAL CONSULTANTS	5
FINANCIAL SECTION	7
BALANCE SHEET	
STATEMENT OF REVENUES, EXPENSES AND CHANGES IN FUND BALANCE	
NOTES TO FINANCIAL STATEMENTS	
ACTUARIAL SECTION	21
ANALYSIS OF VALUATION	
APPENDICES	
TABLES	
STATISTICAL SECTION	53
REVENUES BY SOURCE	
EXPENSES BY TYPE	
CONTRIBUTION RATES	
ACTIVE MEMBERS	
RETIRED MEMBERS	
LOCATION OF BENEFIT RECIPIENTS	



THE TEACHERS' RETIREMENT SYSTEM DIRECTORS AND OFFICERS

BOARD OF DIRECTORS

JAMES COWAN CHAIRMAN	07-01-92 to 07-01-96	P.O. Box 369 Seeley Lake, MT 59868
W. CRAIG BREWINGTON	07-01-90 to 07-01-94	Hellgate Elementary 2385 Flynn Lane Missoula, MT 59802
E. JOSEPH CROSS	07-01-91 to 07-01-95	2518 Augusta Lane Billings, MT 59102
JOHN U. KRANICK	07-01-89 to 07-01-93	116 River View C Great Falls, MT 59404
NANCY TRACKWELL	07-01-91 to 07-01-93	315 20th Avenue South Great Falls, MT 59405
NANCY KEENAN	Ex Officio	Superintendent of Public Instruction State Capitol Helena, MT 59620

ADMINISTRATIVE OFFICERS

DAVID L. SENN	Administrator
GARY WARREN	Assistant Administrator

PROFESSIONAL CONSULTANTS

MILLIMAN & ROBERTSON, INC.	Actuaries & Consultants Seattle, WA 98101
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FINANCIAL SECTION



BALANCE SHEET

**STATEMENT OF REVENUES, EXPENSES
AND CHANGES IN FUND BALANCE**

NOTES TO FINANCIAL STATEMENTS



**TEACHERS' RETIREMENT SYSTEM
BALANCE SHEET
AS OF JUNE 30, 1992 AND 1991**

	<u>1992</u>	<u>1991</u>
ASSETS		
Current Assets:		
Cash	\$ 7,243,984	\$ 2,479,158
Account	5,570,270	6,436,811
Interest Receivable	<u>13,120,143</u>	<u>13,607,718</u>
Total Current Assets	25,934,397	22,523,687
Investments (Note A):		
Mortgages	\$ 48,889,540	\$ 51,316,774
Securities	476,286,062	480,899,392
Common Stock	194,236,158	162,493,413
Other Investments	92,933,025	41,993,666
Land and Buildings	193,844	193,844
Less: Accum. Depreciation	<u>(83,429)</u>	<u>(79,665)</u>
Total Investments	812,455,200	736,817,424
Other Assets:		
Intangible Assets	\$ 1,491	\$ 2,739
Equipment	79,411	72,077
Less: Accum. Depreciation	(49,539)	(41,656)
Deferred Losses	<u>962,822</u>	<u>2,821,663</u>
Total Other Assets	<u>994,185</u>	<u>2,854,823</u>
TOTAL ASSETS	\$839,383,782	\$762,195,934
LIABILITIES		
Accounts Payable	\$ 174,025	\$ 494,180
Accrued Expenditures	45,679	0
Payroll Clearing	791	791
Accountability for Adv. (Note A)	125,895	215,778
Compensated Absences (Note A)	17,275	22,627
Property Held in Trust	<u>(518)</u>	<u>(141)</u>
TOTAL LIABILITIES	<u>363,147</u>	<u>733,235</u>
NET ASSETS AVAILABLE FOR BENEFITS	<u><u>\$839,020,635</u></u>	<u><u>\$761,462,699</u></u>

The accompanying notes are an integral part
of these financial statements.

**TEACHERS' RETIREMENT SYSTEM
BALANCE SHEET
AS OF JUNE 30, 1992 AND 1991**

	<u>1992</u>	<u>1991</u>
FUND BALANCE (Note C)		
Pension Benefit Obligation (PBO):		
Retirees and beneficiaries currently receiving benefits	\$ 590,740,128	\$ 518,000,000
Terminated employees not yet receiving benefits	31,276,067	29,000,000
Current employees:		
Accumulated employee contributions	407,440,993	374,933,105
Employer-financed:		
Vested	400,122,501	393,384,457
Nonvested	<u>19,902,705</u>	<u>4,682,438</u>
Total PBO	\$1,449,482,394	\$1,320,000,000
Unfunded PBO	<u>(610,461,759)</u>	<u>(558,537,301)</u>
TOTAL FUND BALANCE	<u>\$ 839,020,635</u>	<u>\$ 761,462,699</u>

The accompanying notes are an integral part
of these financial statements.

**TEACHERS' RETIREMENT SYSTEM
STATEMENT OF REVENUES, EXPENSES, AND
CHANGES IN FUND BALANCE
FOR THE FISCAL YEAR ENDED JUNE 30, 1992 AND 1991**

	<u>1992</u>	<u>1991</u>
OPERATING REVENUES		
Member Contributions	\$ 34,677,331	\$ 32,611,152
Employer Contributions	35,759,120	33,274,827
Investment Earnings	<u>70,680,973</u>	<u>67,033,563</u>
Total Operating Revenues	\$141,117,424	\$132,919,542
OPERATING EXPENSES		
Benefit Payments	\$ 60,763,611	\$ 54,869,861
Withdrawals	3,307,312	4,243,421
Administrative Expense (Note F)	<u>865,335</u>	<u>677,610</u>
Total Operating Expenses	\$ 64,936,258	\$ 59,790,892
OPERATING TRANSFERS IN		
Public Employees Retirement System	87,059	159,824
Income Transfers (Note B)	<u>1,432,670</u>	<u>0</u>
Total Transfers In	<u>1,519,729</u>	<u>159,824</u>
OPERATING INCOME	\$ 77,700,895	\$ 73,288,474
BEGINNING FUND BALANCE	761,462,699	689,184,654
Adjustments to Fund Balance	(14,071)	0
Prior Year Adjustments	<u>(128,888)</u>	<u>(1,010,429)</u>
ENDING FUND BALANCE	<u><u>\$839,020,635</u></u>	<u><u>\$761,462,699</u></u>

The accompanying notes are an integral part
of these financial statements

TEACHERS' RETIREMENT SYSTEM
NOTES TO THE FINANCIAL STATEMENTS
FISCAL YEARS ENDED JUNE 30, 1992 AND 1991

NOTE A. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Basis of Accounting

The Teachers' Retirement System maintains its accounts on the full accrual basis of accounting. Employee and employer contributions are recognized as revenues in the period in which employee services are performed and expenses are recorded when the corresponding liabilities are incurred, regardless of when payment is made.

Valuation of Investments

Short-term investments and state securities are recorded at cost. Federal and corporate securities are stated at par value decreased by unamortized discounts amounting to \$83,914,499 in fiscal year 1992 and \$21,666,353 in fiscal year 1991. Mortgages were decreased by unaccumulated mortgage discount of \$74,178 in fiscal year 1992 and \$88,419 in fiscal year 1991.

The market value of the various investments of at June 30, 1992, was as follows:

Montana Common Stock Pool		\$269,525,034
Short-Term Investment Pool		41,621,800
Other Common Stock		162,000
Securities:		
U.S. Government	\$ 87,683,287	
Corporate Bonds	<u>502,879,277</u>	
Securities Subtotal		590,562,564
Other Investments		14,709,348
Montana Mortgages		48,889,540
Land and Buildings		<u>110,415</u>
		<u>\$965,580,701</u>

Gains and Losses on Bond Swaps

The deferral and amortization method was used for accounting for gains and losses on bond swaps. The unamortized deferred gains or losses are netted against the investment account and written off over the life of either the bond sold or acquired, whichever is less.

Compensated Absences

Compensated absences represent 100 percent of accrued vacation and 25 percent of accrued sick leave for division personnel at June 30, 1992.

Accountability for Advances

Accountability for advances represents the liability associated with amounts received as an advance from other accounting entities or other governments at June 30, 1992.

The TRS financial statements do not include the Minnie Fullam (MF) Fund, a legacy fund that is administered by the Teachers' Retirement System. The MF financial statements are presented below:

**Minnie Fullam Fund
Statement of Revenues, Expenses, and
Changes in Fund Balance
For the Fiscal Years Ended June 30, 1992 and 1991**

Investment Revenue	\$2,820	\$3,126
Administrative Expense		(2,250)
Beginning Fund Balance	41,413	40,493
Adjustments to Fund Balance	<u>0</u>	<u>43</u>
Ending Fund Balance	<u>\$44,233</u>	<u>\$41,412</u>

**Minnie Fullam Fund
Balance Sheet
As of June 30, 1992 and 1991**

Assets:		
Cash	\$ 269	\$ 348
MT Common Stock Pool	22,064	22,064
Short Term Investments	<u>21,900</u>	<u>19,000</u>
Total Assets	<u>\$44,233</u>	<u>\$41,412</u>
 Total Fund Balance	 <u>\$44,233</u>	 <u>\$41,412</u>

NOTE B. DESCRIPTION OF PLAN

The Teachers' Retirement Board is the administrator of a mandatory multiple-employer, cost-sharing system which provides retirement services to all persons in Montana employed as teachers or professional staff of any public elementary or secondary school, vocational-technical center or unit of the university system. The System was established by the State of Montana in 1937 and is governed by Title 19, Chapter 4, of the Montana Code Annotated.

At June 30, 1992, the number and type of employers participating in the System was as follows:

Local School Districts	421
Community Colleges	3
University System Units	6
State Agencies	<u>11</u>
Total	<u>441</u>

At June 30, 1992, the System membership consisted of the following:

Retirees and Beneficiaries	
Currently Receiving Benefits	6,926
Terminated Employees Entitled to But Not Yet Receiving Benefits	6,064
Current Members:	
Vested	10,720
Nonvested	<u>5,917</u>
Total Membership	<u>29,627</u>

The pension plan provides retirement benefits and death and disability benefits. Employees with a minimum of 25 years of service or who have reached age 60 with 5 years of service are eligible to receive an annual retirement benefit equal to 1/60 times creditable service years times the average final compensation. Final compensation is the average of the highest three consecutive years of earned compensation. Benefits fully vest after 5 years of creditable service. Vested employees may retire at or after age 50 and receive reduced retirement benefits.

Effective January 1, 1988, university system employees eligible to participate in the Teachers' Retirement System could elect to participate in an Optional Retirement Plan established by the Board of Regents. As of July 1, 1991, a total of 604 eligible university system employees have elected to participate in the Optional Retirement Plan.

Effective January 1, 1990, certain members of the Teachers' Retirement System are eligible to receive a post retirement adjustment. The adjustment is funded by annual interest earnings in excess of the required 8%. To be eligible, a retiree or beneficiary must be at least 55 years of age or be receiving a disability or survivor allowance and have been receiving a monthly benefit for 24 months preceding June 30 each year. In fiscal year 1992, \$1,119,559.39 was disbursed to eligible recipients.

Effective calendar year 1991, certain members of the Teachers' Retirement System, who, for tax

purposes, are also Montana residents, are eligible to receive an annual adjustment to offset the state taxation of retired benefits. The adjustment is funded through a transfer from the General Fund. During fiscal year 1992, \$1,432,670 was distributed to eligible recipients.

NOTE C. FUNDING STATUS AND PROGRESS

The pension benefit obligation is a standardized disclosure of the present value of pension benefits, adjusted for the effects of projected salary increases, estimated to be payable in the future as a result of employee service to date. The measure is the actuarial present value of credited projected benefits and is intended to help users assess the System's funding status on a going-concern basis, assess progress made in accumulating sufficient assets to pay benefits when due and make comparisons with other public employee retirement systems. The measure is independent of the actuarial funding method used to determine contributions to the System.

The pension benefit obligation was determined as part of an actuarial valuation at July 1, 1992. Significant actuarial assumptions at June 30, 1992 include (a) a rate of return on the investment of present and future assets of 8% per year compounded annually, and (b) projected salary increases of 6.5% due to inflation. These same assumptions were used in the actuarial valuation at July 1, 1990.

At June 30, 1992, the unfunded pension benefit obligation was as follows:

Pension Benefit Obligation:

Retirees and beneficiaries currently receiving benefits	\$ 590,740,128
Terminated members entitled to but not yet receiving benefits	31,276,067
Current employees:	
Accumulated employee contributions	407,440,993
Employer-financed vested	400,122,501
Employer-financed nonvested	<u>19,902,705</u>
Total Pension Benefit Obligation	\$1,449,482,394
Net Assets Available for Benefits at Cost (Market Value 1992 - \$992,146,136)	<u>839,020,635</u>
Unfunded Pension Benefit Obligation	<u>\$ 610,461,759</u>

NOTE D. CONTRIBUTIONS REQUIRED AND CONTRIBUTIONS MADE

The TRS funding policy provides for periodic employer and employee contributions at rates specified by State Law; contribution requirements are not actuarially determined. An actuary determines the actuarial implications of the funding requirement in an annual actuarial valuation. The actuarial method used to determine the implications of the statutory funding level is the entry age normal funding method, with both normal cost and amortization of the accrued liability determined as a level percentage of payroll. The actuarial valuation prepared as of July 1, 1992, the most recent valuation date, indicates the statutory rate was sufficient to fund the normal cost and to amortize the unfunded accrued liability under the entry age normal method over 34.9 years. During fiscal years 1992 and 1991, no changes were made in the method used to calculate or establish contribution requirements, nor were there any changes in the law affecting benefits.

Actual contributions made to the System during the fiscal year ending June 30, 1992, were as follows:

Covered payroll	\$425,125,516
Employer contributions	\$ 35,759,120
--% of covered payroll(R)	7.459%
--% of covered payroll(A)	8.411%
Employee contributions	\$ 32,611,152
--% of covered payroll(R)	7.044%
--% of covered payroll(A)	8.157%

(R)Contributions required by statute.

(A)Actual contributions.

Employer contributions include transfers from the Public Employees' Retirement System.

NOTE E. HISTORICAL TREND INFORMATION

ANALYSIS OF FUNDING PROGRESS

	<u>As of June 30</u>			
	<u>1992</u>	<u>1991</u>	<u>1990</u>	<u>1989</u>
Net assets available for benefits as a % of PBO	57.9%	57.7%	57.1%	56.4%
Unfunded PBO as a % of annual covered payroll	143.6%	138.2%	130.6%	133.2%
Employer contributions as a % of annual covered payroll	8.411%	8.231%	7.734%	7.428%

Supplemental schedules of historical trend information are presented on page 26 of the Statistical Section.

NOTE F. ADMINISTRATIVE EXPENSES

Administrative expenses for the years ended June 30, 1992 and 1991, are outlined below:

	<u>1992</u>	<u>1991</u>
Personal Services:		
Salaries	\$241,886	\$209,929
Other Compensation	2,500	2,200
Employee Benefits	<u>58,965</u>	<u>50,304</u>
Total Personal Services	\$303,351	\$262,433
Operating Expenses:		
Contracted Services	\$252,574	\$109,586
Supplies and Materials	15,559	11,755
Communications	39,423	32,397
Travel	9,225	6,867
Rent	43,812	42,739
Repair and Maintenance	6,952	5,606
Other Expenses	4,386	2,694
Equipment	226	0
Intangible Assets	931	0
Compensated Absences	(5,352)	(1,103)
Depreciation	11,647	11,299
Amortization	<u>1,681</u>	<u>1,645</u>
Total Operating Expense	\$381,064	\$223,485
Investment Expense	<u>180,920</u>	<u>191,692</u>
Total Administrative Expense	<u>\$865,335</u>	<u>\$677,610</u>



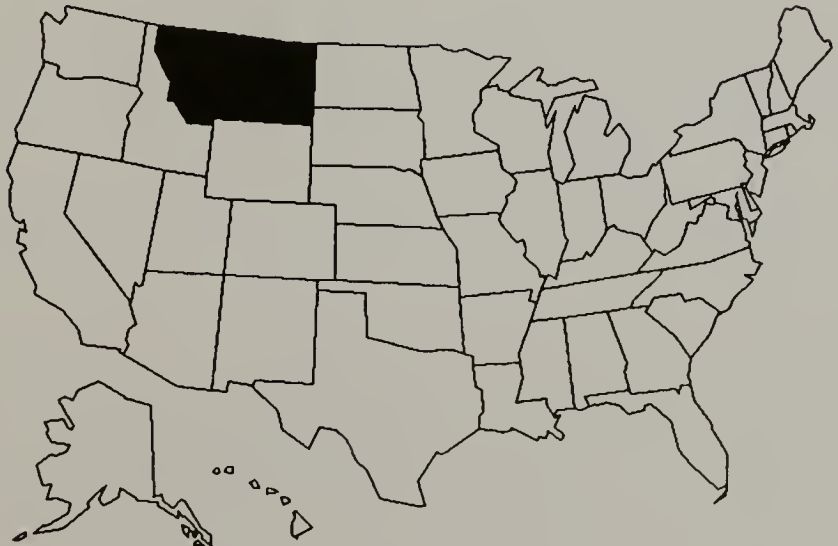
ACTUARIAL SECTION

ANALYSIS OF VALUATION

- 1. SUMMARY OF THE FINDINGS**
- 2. SCOPE OF THE REPORT**
- 3. ASSETS**
- 4. ACTUARIAL LIABILITIES**
- 5. EMPLOYER CONTRIBUTIONS**
- 6. ACTUARIAL INFORMATION FOR ACCOUNTING PURPOSES**

APPENDICES

TABLES



Teachers' Retirement System Analysis of Valuation

Section 1: Summary of the Findings

As a result of the actuarial valuation of the benefits in effect under the Montana Teachers' Retirement System (TRS) as of July 1, 1992, Milliman & Robertson recommends that the current employer contribution rate, 7.459% of members' salaries, remain in effect.

This rate is sufficient to meet the actuarial cost of the System accruing on the valuation date and to amortize the unfunded actuarial liability over 34.9 years. The actuarial costs are calculated using the entry age actuarial cost method.

The July 1, 1989 actuarial valuation found that the period then required to amortize the unfunded actuarial liability was 36.3 years. Thus, the expected amortization period as of July 1, 1992 would have been 33.3 years, rather than the actual 34.9 years determined by the current actuarial valuation. The difference in these results reflects minor net actuarial losses during the past three years.

Section 2: Scope of the Report

This report presents the actuarial valuation of the Montana Teachers' Retirement System as of July 1, 1992. This is the first valuation Milliman & Robertson has performed for the System.

A summary of the findings resulting from this valuation is presented in the previous section. Section 3 describes the assets of the System. A summary of the assets is set forth in Table 1. Sections 4 and 5 describe how the obligations of the System are to be met under the actuarial cost method in use.

Section 6 discloses actuarial information based on the requirements of Statement No. 5 of the Governmental Accounting Standards Board.

The actuarial procedures and assumptions used in this valuation are described in Appendix A.

The current benefit structure, as determined by the provisions of the governing law on January 1, 1992, is summarized in Appendix B. Schedules of valuation data classifying the data used in the valuation by various categories of contributing members, former contributing members, and beneficiaries make up Appendix C.

Appendix D provides a brief summary of the System's recent experience. Comparative statistics are presented on the System's membership and contribution rates. Appendix E is a glossary of actuarial terms used in this report.

Section 3: Assets

In many respects, an actuarial valuation can be regarded as an inventory process. The inventory is taken as of the actuarial valuation date, which for this valuation is July 1, 1992. On that date the assets available for the payment of benefits are appraised. These assets are compared with the

actuarial liabilities, which are generally well in excess of the assets. The actuarial process thus leads to a method of determining what contributions by members and their employers are needed to strike a balance.

For the July 1, 1989 valuation, the prior actuary adopted a new asset valuation method based on a three-year smoothing between the System's cost value and market value.

The total assets of the System are reduced by a minor portion that is set aside for the payment of current liabilities. The Fullam Fund is also excluded. The resulting net assets equal the total fund balance available for the payment of benefits.

Table 1 summarized the actuarial value of the net assets available for benefits on July 1, 1992, based on the method adopted by the Board for the July 1, 1989 valuation.

Section 4: Actuarial Liabilities

In the previous section, an actuarial valuation was related to an inventory process, and an analysis was given of the inventory of assets of the System as of the valuation date, July 1, 1992. In this section, the discussion will focus on the commitments of the System, which will be referred to as its actuarial liabilities.

Table 2 contains an analysis of the actuarial present value of all future benefits for contributing members, for former contributing members, and for beneficiaries. The analysis is given by type of benefit and by sex.

The actuarial liabilities summarized in Table 2 include the actuarial present value of all future benefits expected to be paid with respect to each member. For an active member, this value includes a measure of both benefits already earned and future benefits to be earned. Thus, for all members, active and retired, the value extends over benefits earnable and payable for the rest of their lives and, if an optional benefit is chosen, for the lives of their surviving beneficiaries.

Section 5: Employer Contributions

In the previous two sections, attention has been focused on the assets and actuarial liabilities of the System. A comparison of Tables 1 and 2 indicates that there is a shortfall in current assets to meet the total actuarial liabilities. This is the universal experience in all but a fully closed-down fund, where no further contributions of any sort are anticipated.

In an active system, there will always be a difference between the actuarial liabilities and the assets. This difference has to be funded with future contributions and investment returns. An actuarial valuation sets a schedule of future contributions that will deal with this funding in an orderly fashion.

The method used to determine the incidence of the contributions in various years is called the actuarial cost method. For this valuation, the entry age actuarial cost method has been used. Under this method, or essentially any actuarial cost method, the contributions required to meet the difference between current assets and current liabilities are allocated each year between two elements:

A normal cost amount, which ideally is relatively stable as a percentage of salary over the years; and

Whatever amount is left over, which is used to amortize what is called the unfunded actuarial liability.

The two items described above, normal cost and unfunded actuarial liability, are the keys to understanding the actuarial cost method.

The normal cost is the theoretical contribution rate which will meet the ongoing costs of a group of average new employees. Suppose that a group of new employees were covered under a separate fund from which all benefits and to which all contributions and associated investment return were to be paid. Under the entry age actuarial cost method, the normal cost contribution rate is that level percentage of pay which would be exactly right to maintain this fund on a stable basis. If experience were to follow the actuarial assumptions exactly, the fund would be completely liquidated with the last payment to the last survivor of the group.

The normal cost rates by type of employee and by type of benefit under the System are summarized in Table 3.

Milliman & Robertson noted several changes between the normal cost rates for the July 1, 1989 and the July 1, 1992 valuations. First, the component rates for the types of benefits show some shifting. Milliman & Robertson allocated the rates by the reason for termination (service, disability, death, termination) while the prior allocation was based on the benefit received. For example, if a person eligible for retirement was assumed to elect a refund of contributions, our model would include the liability in service retirement, whereas the prior method would consider the liability as a refund of contributions. Allocation by component is not critical to the funding of the System.

The term "fully funded" is often applied to a system where contributions for everyone at the normal cost rate will fully pay for the benefits of existing as well as new employees. More often than not, systems are not fully funded, either because of benefit improvements in the past which have not been completely paid for or actuarial deficiencies which have occurred because experience has not been as favorable as anticipated. Under these circumstances, an unfunded actuarial liability (UAL) exists.

Table 4 shows how the UAL was derived for the System. Lines A and B show, respectively, the total present value of future benefits and the portion of the future liability that is expected to be paid from future normal cost contributions, both employer and employee. Line C shows the actuarial liability: the portion of the present value of future benefits not provided by future normal cost contributions. Line D shows the assets available for benefits. Finally, Line E shows the unfunded actuarial liability.

As can be seen from this discussion, a key consideration in the adequacy of the funding of the System is how the UAL is being amortized. Table 5 shows that the current employer and member contribution rates are adequate to pay the total normal cost rate (9.876% of pay), with enough left over to amortize the UAL in 34.9 years. This calculation assumes continuing contributions of 4.503% of payroll for members of the Optional Retirement Program. Therefore, the current basis is sufficient to meet future requirements.

The unfunded actuarial liability at any date after establishment of a system is affected by any actuarial gains or losses arising when the actual experience of the system varies from the experience anticipated by the actuarial assumptions used in the valuations. To the extent actual experience as it develops differs from the assumptions used, so also will the actual emerging costs differ from the estimated costs.

In 1985 a target period of 40 years was established for the amortization of the unfunded liability

generated at each valuation. Table 6 contains the schedule of unfunded actuarial liability accounts. Also shown is the employer contribution required to meet the 40-year goal, 14.834%. This exceeds the current statutory contribution of 14.503%. The funding target is not met by the current employer contribution rate. With an overall unfunded actuarial liability funding period of 34.9 years, however, we believe the System is actuarially sound and that increases to the statutory contribution rates are not required.

Section 6: Actuarial Information for Accounting Purposes

Statement No. 5 of the Governmental Accounting Standards Board (GASB) requires disclosure of certain pension information by public employee retirement systems. Each system's funding status on a going concern basis is determined by comparing its pension benefit obligation (PBO) to the net assets available to fund benefits. Each system is to analyze its funding progress by following the trend of its funding status.

The pension benefit obligation (PBO) is that portion of the actuarial present value of benefits attributable to service earned to date, adjusted for the effects of projected salary increases. It is intended as a standardized disclosure measure which will allow comparisons among different public employee retirement systems. The determination of the PBO is independent of the actuarial cost method, but is dependent upon the actuarial assumptions used to calculate the actuarial present values.

The PBO determined as of July 1, 1992 is shown in Table 7 and is based on the actuarial assumptions used in the valuation as described in Appendix A. It is analyzed separately for inactive members and annuitants and for active members. The active members' PBO is also divided between the employee-financed (accumulated member contributions) and employer-financed portions, with the employer-financed portion shown separately for vested benefits and nonvested benefits.

The unfunded PBO is the excess of the PBO over the net assets available for benefits, determined in accordance with the method used to value assets for the System's balance sheet purposes. The net asset amount shown on line B was furnished to us, without audit, by the System. The unfunded PBO is shown on line C.

As shown in Table 8, the unfunded PBO has increased from 138.2% of annual salaries as of July 1, 1991 to 143.6% of annual salaries as of July 1, 1992. The unfunded PBO expressed as percentage of annual salaries helps to adjust for the effects of salary inflation in the dollar amounts of PBO.

The comparability of the data from year to year can be affected by changes in actuarial assumptions, benefit provisions, accounting policies, etc. No major changes occurred between July 1, 1989 and July 1, 1992.

APPENDIX A

Actuarial Procedures and Assumptions

The actuarial assumptions used in this valuation are the same as those used for the July 1, 1989 valuation; they are based on an analysis of the System's experience as of July 1, 1989.

Actuarial Cost Method

The actuarial valuation was prepared using the entry age actuarial cost method. Under this method, the actuarial present value of the projected benefits of each Individual included in the valuation is allocated as a level percentage of the Individual's projected compensation between entry age and assumed exit. The portion of this actuarial present value allocated to valuation year is called the normal cost. The normal cost was first calculated for each individual member. The normal cost rate was defined to equal the total of the Individual normal costs, divided by the total pay rate as of July 1, 1992.

The portion of this actuarial present value not provided for at a valuation date by the sum of (a) the actuarial value of the assets, and (b) the actuarial present value of future normal costs is called the unfunded actuarial liability. The unfunded actuarial liability is amortized as a level percentage of the projected salaries of present and future members of the System.

Records and Data

The data used in the valuation consist of financial information; records of age, sex, service, salary, contribution rates, and account balances of contributing members; and records of age, sex, and amount of benefit for retired members and beneficiaries. All of the data were supplied by the System and are accepted for valuation purposes without audit.

Replacement of Terminated Members

The ages at entry and distribution by sex of future members are assumed to average the same as those of the present members they replace. If the number of active members should increase, it is further assumed that the average entry age of the larger group will be the same, from an actuarial standpoint, as that of the present group. Under these assumptions, the normal cost rates for active members will not vary with the termination of present members.

Employer Contributions

At the time of this valuation, the total employer contribution rate for normal costs and amortization of the unfunded actuarial liability was 7.459% of members' salaries.

Administrative Expense

The administrative expenses of the System are assumed to be funded by investment earnings in excess of 8% per year.

Valuation of Assets - Cost Basis

Bonds:	Bonds are valued at amortized book value.
Mortgages:	Mortgages are valued at par value.
Common Stocks:	Each issue of common stock is valued at cost.
Other Assets:	Other assets are carried on a cost basis.

Premiums and discounts are amortized using the straight-life method over the life of the securities (8 years for mortgages).

Valuation of Assets - Actuarial Basis

The difference between the total market value of assets and the cost value of assets is added to the cost value on a 3-year smoothed basis.

Investment Earnings

The annual rate of investment earnings of the assets of the System is assumed to be 8% per year, compounded annually.

Postretirement Benefit Increases

No future postretirement benefit increases are assumed.

Future Salaries

The rate of future salary increases is assumed to be 6.5% per year, compounded annually.

Benefits for Terminating Members

Members terminating with less than five years of service are assumed to request an immediate withdrawal of their contributions with interest. Members with five or more years of service are assumed to select the benefits most advantageous to them.

The data provided for current terminated vested members did not include their accrued benefit. We estimated each member's accrued benefit based on the available contribution account and service information.

Interest on Member Contributions

Interest on member contributions is assumed to accrue at a rate of 7% per annum, compounded annually.

Part-Time Employees

The valuation data for active members identifies part-time members, but gives no indication as to the number of hours worked. As done in the past, we imputed a "part-time percentage" by comparing the pay received to the average pay for recently hired full-time members. Part-time members earning less than \$1,000 during the last year were valued at their current member

contribution balance.

Optional Retirement Program

The total contribution received based on ORP payroll for the fiscal year ending June 30, 1992 was \$1,070,065. Based on a contribution rate of 4.503%, we assumed the total ORP payroll for the fiscal year to be \$23,763,380 (\$1,070,065 divided by 4.503%).

APPENDIX B

Summary of Benefit Provisions

Effective Date	September 1, 1937
Vesting Period	5 years. No benefits are payable unless the member has a vested right, except the return of employee contributions with interest.
Final Compensation	Average of highest 3 consecutive years of earned compensation.
Normal Form of Benefits	Life only annuity. All benefits cease upon death; however, in no event will the member receive less than the amount of employee contributions with interest.
Normal Retirement Benefits	
Eligibility:	25 years of service or age 60.
Benefit:	The retirement benefit is equal to 1/60 of final compensation for each year of service.
Early Retirement Benefits	
Eligibility:	5 years of service and age 50.
Benefit:	The retirement benefit is calculated in the same manner as described for normal retirement, but the benefit is reduced 1/2 of 1% for each of the first 60 months early and 3/10 of 1% for each of the next 60 months early.
Death Benefit	
Eligibility:	5 years of service.
Benefit:	The death benefit is equal to 1/60 of final compensation for each year of service accrued at date of death, with an actuarial adjustment based on the relation of the member's age at death to the beneficiary's age. A monthly benefit of \$200 is paid to each child until age 18. In addition, a lump-sum benefit of \$500 is paid upon the death of an active or retired member.
Disability Benefit	

Eligibility:	5 years of service.
Benefit:	The disability benefit is equal to 1/60 of final compensation for each year of service accrued at date of disability. The minimum benefit is 1/4 of the final compensation.
Withdrawal Benefits	With less than 5 years of service, the accumulated employee contributions with interest are returned. With more than 5 years, the member may elect a refund of contributions with interest or leave the contributions and interest in the System and retain a vested right to retirement benefits.
Tax Sheltered Annuity	The System sponsors a tax-deferred annuity program for the benefit of its members. The policies of this program have been established in accordance with the guidelines set by the Internal Revenue Service. The benefits provided by this program are determined solely by the value of the member's account (voluntary contributions plus interest) using actuarial tables provided by the Retirement Board.
Contributions	Member: 7.044% of compensation. Employer: 7.459% of compensation.

APPENDIX C

Valuation Data

The valuation was based upon the membership of the System as of July 1, 1992. Membership data were supplied by the System and accepted for valuation purposes without audit. However, tests were performed to ensure that the data are sufficiently accurate for valuation purposes.

Table C-1 contains summaries of the data for contributing members. For full-time members, values shown in the tables are the numbers of members and their total and average annual salaries. For part-time members, only the numbers of members are shown. All information is shown separately for males and females.

Table C-2 presents distributions of the following:

- Members receiving service retirement benefits.
- Members receiving disability retirement benefits.
- Survivors of deceased retired members receiving benefits.
- Survivors of deceased active members.
- Child beneficiaries.
- Terminated vested members.

The valuation also includes liabilities attributable to nonvested members who have terminated employment but have not withdrawn their contributions. There are 4,897 such members.

APPENDIX D

Comparative Schedules

This section contains tables that summarize the experience of the System shown in the valuation reports for July 1, 1989 and July 1, 1992.

Table D-1 shows a summary of the active members and the annuitants covered as of the various valuation dates.

APPENDIX E

Glossary

The following definitions are largely excerpts from a list adopted in 1981 by the major actuarial organizations in the United States. In some cases the definitions have been modified for specific applicability to the Teachers' Retirement System. Defined terms are capitalized throughout this Appendix.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disablement, and retirement; changes in compensation, rates of investment earnings, and asset appreciation or depreciation; procedures used to determine the Actuarial Value of Assets; and other relevant items.

Actuarial Cost Method

A procedure for determining the Actuarial Present Value of pension plan benefits and expenses and for developing an actuarially equivalent allocation of such value to time periods, usually in the form of a Normal Cost and an Actuarial Liability.

Actuarial Gain (Loss)

A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions during the period between two Actuarial Valuation dates, as determined in accordance with a particular Actuarial Cost Method.

Actuarial Present Value

The value of an amount or series of amounts payable or receivable at various times, determined as of a given date by the application of a particular set of Actuarial Assumptions.

Actuarial Valuation

The determination, as of a valuation date, of the Normal Cost, Actuarial Liability, Actuarial Value of Assets, and related Actuarial Present Values for a pension plan.

Actuarial Value of Assets

The value of cash, investments and other property belonging to a pension plan, as used by the actuary for the purpose of an Actuarial Valuation.

Actuarially Equivalent

Of equal Actuarial Present Value, determined as of a given date with each value based on the same set of Actuarial Assumptions.

Amortization Payment

That portion of the pension plan contribution which is designed to pay interest on and to amortize the Unfunded Actuarial Liability.

Entry Age Actuarial Cost Method

A method under which the Actuarial Present Value of the Projected Benefits of each individual included in an Actuarial Valuation is allocated on a level basis over the earnings of the individual between entry age and assumed exit ages. The portion of this Actuarial Present Value allocated to a valuation year is called the Normal Cost. The portion of this Actuarial Present not provided for at a valuation date by the Actuarial Present Value of future Normal Costs is called the Actuarial Liability.

Normal Cost

That portion of the Actuarial Present Value of pension plan benefits and expenses which is allocated to valuation year by the Actuarial Cost Method.

Actuarial Liability

That portion, as determined by a particular Actuarial Cost Method, of the Actuarial Present Value of pension plan benefits and expenses which is not provided for by future Normal Costs.

Unfunded Actuarial Liability

The excess of the Actuarial Liability over the Actuarial Value of Assets.

Accrued Benefit

The amount of an individual's benefit (whether or not vested) as of a specific date, determined in accordance with the terms of a pension plan and based on compensation and service to that date.

Projected Benefits

Those pension plan benefit amounts which are expected to be paid at various future times under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age and past and anticipated future compensation and service credits.

Unaccrued Benefit

The excess of an individual's Projected Benefits over the Accrued Benefits as of a specified date.

Teachers' Retirement System

Table 1

Summary of Assets

	<u>Total Fund Balances</u>		<u>Cumulative Unrealized Gain</u>	<u>Increase During Year</u>	<u>Smoothing Weights</u>	<u>Smoothed Portions of Gain</u>
	<u>Cost Value</u>	<u>Market Value</u>				
July 1, 1990	\$689,184,654	\$781,742,844	\$ 92,558,190	\$ 92,558,190	100.00%	\$ 92,558,190
July 1, 1991	\$761,462,699	\$862,344,108	\$100,881,409	\$ 8,323,219	66.67%	\$ 5,548,813
July 1, 1992	\$839,020,635	\$992,146,136	\$153,125,501	\$ 52,244,092	33.33%	\$ 17,414,697

Actuarial Assets

July 1, 1992 Cost Value	\$839,020,635
Smoothed Portion of Gain	<u>115,521,700</u>
July 1, 1992 Actuarial Value	\$954,542,335

Teachers' Retirement System

Table 2

Actuarial Present Value of Future Benefits for Contributing Members, Former Contributing Members, and Beneficiaries

July 1, 1992

(All amounts are actuarial present values in millions)

	<u>Male</u>	<u>Female</u>	<u>Total</u>
A. Active members			
Service Retirement	\$ 541.7	\$ 532.1	\$1,073.8
Disability Retirement	11.2	12.2	23.4
Survivors' Benefits	14.6	5.9	20.5
Termination Benefits	<u>32.3</u>	<u>49.7</u>	<u>82.0</u>
Total	\$ 599.8	\$ 599.9	\$1,199.7
B. Inactive members and annuitants			
Service Retirement	\$ 312.5	\$ 225.9	\$ 538.4
Disability Retirement	6.6	7.3	13.9
Beneficiaries*	5.6	32.9	38.5
Vested Terminated Participants	10.5	13.9	24.4
Nonvested Terminated Participants	<u>2.4</u>	<u>4.5</u>	<u>6.9</u>
Total	\$ 337.6	\$ 284.5	\$ 622.1
C. Grand Total	\$ 937.4	\$ 884.4	\$1,821.8

*Includes survivors of active and retired members, and children's benefits.

Teachers' Retirement System

Table 3

Normal Cost Contribution Rates As Percentage of Salary

	<u>July 1, 1992</u>			<u>July 1, 1989</u>
	<u>Male</u>	<u>Female</u>	<u>Total</u>	<u>Total</u>
Service Retirement	6.031%	6.939%	6.522%	6.780%
Disability Retirement	0.208%	0.240%	0.225%	0.231%
Survivors' Benefits	0.250%	0.112%	0.175%	0.246%
Termination Benefits	<u>3.127%</u>	<u>2.807%</u>	<u>2.954%</u>	<u>1.570%</u>
Total	9.616%	10.098%	9.876%	8.827%

Table 4

Unfunded Actuarial Liability (All dollar amounts in millions)

		<u>July 1, 1992</u>	<u>July 1, 1989</u>
A.	Actuarial present value of all future benefits for present and former members and their survivors (Table 2)	\$ 1,821.8	\$ 1,490.5
B.	Less actuarial present value of total future normal costs for present members	<u>287.9</u>	<u>234.2</u>
C.	Actuarial liability	\$ 1,533.9	\$ 1,256.3
D.	Less actuarial value of assets available for benefits (Table 1)	<u>954.5</u>	<u>653.7</u>
		\$ 579.4*	\$ 602.6

* Of this amount, \$30.5 million will be paid by contributions to TRS of 4.503% of the salaries of the participants in the Optional Retirement Plan.

Teachers' Retirement System

Table 5

Recommended Contribution Rates As Percentage of Salary

	<u>July 1, 1992</u>	<u>July 1, 1989</u>
A. Employer contribution rate	7.459%	7.459%
B. Member contribution rate	<u>7.044%</u>	<u>7.044%</u>
C. Total contribution rate	14.503%	14.503%
D. Less total normal cost rate (Tabel 3)	<u>9.876%</u>	<u>8.827%</u>
E. Amount available to amortize unfunded actuarial liability*	4.627%	5.676%
F. Amortization period from July 1, 1992	34.9 years	33.3 years

* In addition, 4.503% of salaries of the participants in the Optional Retirement Plan is available to help amortize the unfunded actuarial liability.

Teachers' Retirement System

Table 6

Unfunded Actuarial Liability Amortization Schedule

<u>Date Established</u>	<u>Balance on July 1, 1989</u>	<u>Interest Charge on Balance</u>	<u>Contribution Allocated to Un- funded Liability</u>	<u>Interest Credit on Contribution</u>	<u>Balance on July 1, 1992</u>
July 1, 1985	\$642,732,507	\$166,925,345	\$81,516,909	\$10,528,613	\$717,612,330
July 1, 1987	(11,930,465)	(3,098,485)	(1,513,125)	(195,433)	(13,320,392)
July 1, 1989	(28,273,335)	(7,342,924)	(3,585,869)	(463,146)	(31,567,244)
July 1, 1992					<u>(93,324,694)</u>
					\$579,400,000

Required Contribution Rates

<u>Date Established</u>	<u>Remaining Years to Fund</u>	<u>Required Amortization Rates</u>
July 1, 1985	33 Years	5.975%
July 1, 1987	35	(0.106)
July 1, 1989	37	(0.241)
July 1, 1992	40	<u>(0.670)</u>
		4.958%
Plus Normal Cost Rate		<u>9.876</u>
Total Contribution Rate		14.834%

Teachers' Retirement System

Table 7

Unfunded Pension Benefit Obligation (All dollar amounts in millions)

	July 1, 1992	July 1, 1991**
A. Pension Benefit Obligation		
Inactive members		
Retirees and beneficiaries	\$590,740,128	\$518,000,000
Other Terminated employees	<u>31,276,067</u>	<u>29,000,000</u>
Total Inactive	\$ 622,016,195	\$ 547,000,000
Active members		
Accumulated member contributions	\$407,440,993	\$374,933,105
Employer-financed vested	400,122,501	393,384,457
Employer-financed nonvested	<u>19,902,705</u>	<u>4,682,438</u>
Total Active	<u>827,466,199</u>	<u>773,000,000</u>
Total pension benefit obligation	\$1,449,482,394	\$1,320,000,000
B. Less net assets available for benefits*	<u>839,020,635</u>	<u>761,462,699</u>
C. Unfunded pension benefit obligation	\$ 610,461,759	\$ 558,537,301

* Assets are valued at cost for the System's balance sheet purposes. Net assets are total assets less fund liabilities. Market value of net assets on January 1, 1992 is \$992,146,136.
 ** July 1, 1991 values were based on the June 30, 1990 census, projected to July 1, 1991 on an approximate basis.

Teachers' Retirement System

Table 8

Analysis of Funding Progress

Reporting Date (July 1)	(1) Net Assets*	(2) Pension Benefit Obligation (PBO)	(3) Percentage of PBO Funded (1)/(2)	(4) Unfunded PBO (2)-(1)	(5) Annual Salaries	(6) Unfunded PBO as Percentage of Annual Salaries (4)/(5)
1989	\$624,755,142	\$1,107,492,899	56.4%	\$482,737,757	\$362,464,600	133.2%
1990	689,225,147	1,206,792,010	57.1	517,566,863	396,235,432	130.6
1991	761,462,699	1,320,000,000	57.7	558,537,301	404,256,229	138.2
1992	839,020,635	1,449,482,394	57.9	610,461,759	425,125,516	143.6

Analysis of the dollar amounts of net assets available for benefits, pension benefit obligation, and unfunded pension benefit obligation in isolation can be misleading. Expressing the net assets available for benefits as a percentage of the pension benefit obligation provides one indication of a Retirement System's funding status on a going-concern basis. Analysis of this percentage over time indicates whether the system is becoming financially stronger or weaker. Generally, the greater this percentage, the stronger the retirement system. Trends in the unfunded pension benefit obligation and annual covered payroll are both affected by inflation. Expressing the unfunded pension benefit obligation as a percentage of annual covered payroll approximately adjusts for the effects of inflation and aids analysis of TRS's progress made in accumulating sufficient assets to pay benefits when due. Generally, the smaller this percentage, the stronger the Retirement System.

* Assets are valued at cost for the System's balance sheet purposes. Net assets are total assets less fund liabilities.

Teachers' Retirement System
Active Members - Full Time
Distribution of Employees and Salaries as of July 1, 1992
Number of Employees - By Age Group - Males

Age	Completed Years of Service												Totals
	0	1	2	3 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 +	
< 25	4	24	3										31
25 to 29	37	96	76	96	32								337
30 to 34	5	57	48	75	204	51							440
35 to 39	10	42	37	84	215	264	90						742
40 to 44	14	46	49	68	167	231	415	139	1				1,130
45 to 49	7	31	24	33	103	124	287	577	124				1,310
50 to 54	2	25	11	23	55	62	91	252	318	62			901
55 to 59	1	11	8	14	21	25	31	74	104	136	20	1	446
60 to 64			1	4	13	19	10	29	34	34	30	5	179
65 to 69					5	1	1	4	2		1	2	16
70 & up						1	1			1		1	4
Totals	80	332	257	397	815	778	926	1,075	583	233	51	9	5,536

Number of Employees - By Age Group - Females													
Age	Completed Years of Service												
	0	1	2	3 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 +	Totals
< 25	19	79	21										119
25 to 29	41	175	157	194	105								672
30 to 34	14	97	69	141	421	125							867
35 to 39	29	108	119	167	329	417	122	1					1,292
40 to 44	23	127	123	208	417	404	506	152	1				1,961
45 to 49	16	71	84	114	258	266	275	313	95				1,492
50 to 54	5	16	32	42	132	148	166	172	120	53			886
55 to 59	4	6	12	19	38	58	95	94	97	40	13		476
60 to 64		3	2	3	11	19	23	43	37	15	11	4	171
65 to 69		1	1	1	1	5	5	3	2	3	1	1	24
70 & up			1	1				1	2			1	6
Totals	151	683	621	890	1,712	1,442	1,192	779	354	111	25	6	7,966

Table C-1
(Continued)

Teachers' Retirement System
Active Members - Full Time
Distribution of Employees and Salaries as of July 1, 1992
Average Monthly Salaries - By Age Group - Males

Age	Completed Years of Service											Totals
	0	1	2	3 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 +
< 25	10,625	19,086	20,313									18,113
25 to 29	12,264	19,422	20,500	21,752	24,027							19,986
30 to 34	8,115	21,720	22,330	24,251	26,813	31,069						25,508
35 to 39	7,956	22,414	23,564	24,529	28,633	31,904	34,717					29,187
40 to 44	24,428	23,935	27,187	26,954	31,819	35,809	35,636	36,635	37,146			33,728
45 to 49	20,757	29,364	24,522	33,186	37,241	37,136	38,191	38,655	39,084			37,627
50 to 54	2,508	31,666	35,825	31,096	31,796	41,160	40,527	41,181	40,623	41,726		39,708
55 to 59	37,000	31,144	33,934	31,262	40,310	42,978	37,774	42,026	43,131	41,300	45,843	41,140
60 to 64			23,672	42,933	41,747	49,263	39,548	42,351	44,117	48,605	43,982	44,598
65 to 69					50,531	32,088	22,123	46,846	48,267		40,408	44,161
70 & up						70,800	48,588			41,038	46,019	51,611
Totals	14,321	23,040	24,018	25,743	30,595	35,410	36,933	39,348	40,967	42,478	44,642	34,430

Average Monthly Salaries - By Age Group - Females

Age	Completed Years of Service											Totals
	0	1	2	3 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 +
< 25	7,927	17,419	18,455									16,086
25 to 29	13,462	17,778	19,298	19,650	21,499							18,992
30 to 34	11,426	19,005	19,142	20,192	23,541	25,729						22,258
35 to 39	10,669	15,964	19,551	20,846	24,460	28,298	30,611	46,680				24,358
40 to 44	15,124	16,922	18,483	21,639	25,772	29,294	32,183	34,050	31,092			27,203
45 to 49	16,891	18,622	21,304	22,174	26,446	30,258	32,851	34,038	35,721			29,399
50 to 54	25,713	17,038	20,476	22,337	25,977	29,874	32,093	33,573	35,167	34,131		30,447
55 to 59	14,932	24,105	19,028	16,689	24,111	28,065	30,143	33,082	34,192	35,560	36,745	30,428
60 to 64		20,183	22,693	10,905	25,552	31,916	32,342	35,127	33,941	33,445	34,654	32,569
65 to 69		27,960	6,262	14,458	450	32,101	30,892	32,380	26,568	21,789	39,000	27,358
70 & up			7,690	1,705				38,796	35,644		32,456	25,323
Totals	13,101	17,616	19,437	20,757	24,773	28,929	31,999	33,898	34,863	34,220	35,915	26,424

**Teachers' Retirement System
Active Members - Full Time
Distribution of Employees and Salaries as of July 1, 1992
Monthly Salaries in Thousands - By Age Group - Males**

Monthly Salaries in Thousands - By Age Group - Females

Age	Completed Years of Service												Totals
	0	1	2	3 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 +	
< 25	151	1,376	388										1,914
25 to 29	552	3,111	3,030	3,812	2,257								12,762
30 to 34	160	1,843	1,321	2,847	9,911	3,216							19,298
35 to 39	309	1,724	2,327	3,481	8,047	11,800	3,735						31,470
40 to 44	348	2,149	2,273	4,501	10,747	11,835	16,285	47					53,344
45 to 49	270	1,322	1,790	2,528	6,823	8,049	9,034	10,654	31				43,863
50 to 54	129	273	655	938	3,429	4,421	5,327	5,775	4,220	1,809			26,976
55 to 59	60	145	228	317	916	1,628	2,864	3,110	3,317	1,422			14,484
60 to 64		61	45	33	281	606	744	1,510	1,256	502	478		5,569
65 to 69		28	6	14	1	161	154	97	53	65	39	150	657
70 & up			8	2				39	71			32	152
Totals	1,978	12,032	12,071	18,473	42,412	41,716	38,143	26,407	12,341	3,798	898	220	210,490

Table C-1
(Continued)

Teachers' Retirement System
Active Members - Part Time
Distribution of Employees and Salaries as of July 1, 1992
Number of Employees - By Age Group - Males

Age	0	1	2	3 to 4	5 to 9	Completed Years of Service					25 to 29	30 to 34	35 to 39	40+	Totals
						10 to 14	15 to 19	20 to 24							
< 25	12	1													13
25 to 29	92	13	8	4											117
30 to 34	26	11	3		6	1									47
35 to 39	20	8	10	11	2	5	1								57
40 to 44	28	11	4	4	8	7	7								69
45 to 49	15	10	3	3	5	5	5								46
50 to 54	8	4	3	5	4	1	3	4			3				35
55 to 59	6	1	1	1	2	1	2	1			1	2			18
60 to 64				3	1		1								6
65 to 69	3			1	1		1								6
70 & up		1			2										3
Totals	210	60	32	32	31	20	18	8			4	2	0	0	417

Number of Employees - By Age Group - Females

Age	0	1	2	3 to 4	5 to 9	Completed Years of Service					25 to 29	30 to 34	35 to 39	40+	Totals
						10 to 14	15 to 19	20 to 24							
< 25	48	7	1												56
25 to 29	189	52	25	19	4										289
30 to 34	107	55	31	41	46	8									288
35 to 39	162	69	51	43	77	51	3								456
40 to 44	150	98	60	58	70	39	16	2							493
45 to 49	101	66	33	43	37	31	12	3							326
50 to 54	47	31	19	20	29	21	11	3			1				182
55 to 59	20	13	12	17	14	8	7	4				1			96
60 to 64	10	7	4	3		4	6	5			2	1			41
65 to 69	1		3	3	1	2									10
70 & up	4	2		1	1										8
Totals	839	400	239	248	279	164	55	17			3	0	1	0	2,245

Total of Above
Part Time Participants with Salary Less Than \$1,000
Total Part Time Participants

2,662
479
3,141

Teachers' Retirement System

Table C-2

Distribution of Inactive Lives

Members Receiving Service Retirement Benefits as of July 1, 1992

Age	Number of Persons		Annual Benefits In Thousands		Average Annual Benefits	
	Male	Female	Male	Female	Male	Female
<50	22	23	323	321	14,699	13,948
50 to 54	182	115	2,833	1,408	15,568	12,241
55 to 59	374	206	6,123	2,333	16,371	11,316
60 to 64	488	396	7,346	4,079	15,053	10,300
65 to 69	528	449	7,273	3,983	13,774	8,870
70 to 74	342	578	4,193	4,424	12,259	7,654
75 to 79	242	613	2,221	3,818	9,178	6,229
80 to 84	134	576	886	2,751	6,612	4,777
85 to 89	89	393	509	1,796	5,716	4,570
90 and up	36	198	200	943	5,543	4,761
Total	2,437	3,547	31,906	25,854	13,092	7,289

Members Receiving Disability Retirement Benefits as of July 1, 1992

Age	Number of Persons		Annual Benefits In Thousands		Average Annual Benefits	
	Male	Female	Male	Female	Male	Female
<50	9	8	64	53	7,065	6,653
50 to 54	10	12	85	92	8,474	7,643
55 to 59	16	14	127	103	7,907	7,369
60 to 64	14	16	130	116	9,305	7,278
65 to 69	9	18	82	99	9,101	5,493
70 to 74	13	25	92	119	7,089	4,753
75 to 79	7	20	43	90	6,073	4,479
80 to 84	2	7	14	37	7,248	5,217
85 to 89		9		40		4,475
90 and up		2		9		4,507
Total	80	131	636	758	13,092	5,783

Teachers' Retirement System

Table C-2
(Continued)

Distribution of Inactive Lives

Survivors of Deceased Retired Members as of July 1, 1992

Age	Number of Persons		Annual Benefits in Thousands		Average Annual Benefits	
	Male	Female	Male	Female	Male	Female
<50	8	7	31	39	3,915	5,640
50 to 54	4	7	19	46	4,652	6,558
55 to 59	4	14	13	144	3,369	10,293
60 to 64	1	23	7	222	6,680	9,666
65 to 69	5	47	25	356	5,017	7,567
70 to 74	9	46	50	328	5,573	7,126
75 to 79	10	44	48	328	4,758	7,459
80 to 84	10	52	34	265	3,353	5,093
85 to 89	6	30	21	139	3,493	4,640
90 and up	1	13	2	72	1,573	5,565
Total	58	283	249	1,940	4,293	6,855

Survivors of Deceased Active Members as of July 1, 1992

Age	Number of Persons		Annual Benefits in Thousands		Average Annual Benefits	
	Male	Female	Male	Female	Male	Female
<50	36	66	107	280	2,974	4,246
50 to 54	6	19	21	177	3,520	9,325
55 to 59	8	24	38	145	4,811	6,027
60 to 64	7	37	42	351	5,986	9,476
65 to 69	15	31	76	268	5,072	8,631
70 to 74	8	31	39	192	4,854	6,196
75 to 79	7	20	32	93	4,635	4,648
80 to 84	4	14	21	78	5,126	5,588
85 to 89		6		32		5,340
90 and up	5		36		7,126	
Total	96	248	412	1,616	4,292	6,514

Teachers' Retirement System

Table C-2
(Continued)

Distribution of Inactive Lives

Terminated Vested Members as of July 1, 1992
Number of Persons

<u>Age</u>	<u>Male</u>	<u>Female</u>	<u>Total</u>
<25	0	0	0
25 to 30	1	5	6
30 to 35	15	83	98
35 to 40	45	131	176
40 to 45	98	178	276
45 to 50	98	143	241
50 to 55	87	105	192
55 to 60	51	75	126
60 to 65	16	25	41
65 and up	<u>3</u>	<u>8</u>	<u>11</u>
Total	414	753	1,167

Child Beneficiaries as of July 1, 1992*
Number of Persons

<u>Age</u>	<u>Male</u>	<u>Female</u>	<u>Total</u>
<5	1	0	1
5 to 6	0	0	0
7 to 8	4	0	4
9 to 10	1	2	3
11 to 12	4	5	9
13 to 14	5	3	8
15 to 16	3	5	8
17 and up	<u>8</u>	<u>6</u>	<u>14</u>
Total	26	21	47

* Child Beneficiaries all receive \$200 per month, for a total of \$112,800 per year.

Teachers' Retirement System

Table D-1

Membership Data

Active Members

Valuation Date (July 1)	Full-Time Members	Part-Time Members	Total Contributing Members	Annual Full- Time Salaries In Thousands	Average Full- Time Annual Salary	Average Age	Average Years of Service
1987	13,105	1,955	15,060	\$340,481	\$25,981	*	*
1989	12,546	2,541	15,087	\$339,866	\$27,090	*	*
1992	13,502	3,141	16,643	\$401,092	\$29,706	42.4	11.6

Annuitants

Valuation Date (July 1)	Number	Annual Benefits In Thousands	Average Annual Benefit
1987	6,036	\$43,236	\$7,163
1989	6,330	\$49,546	\$7,827
1992	6,927	\$63,483	\$9,165

*Not Available

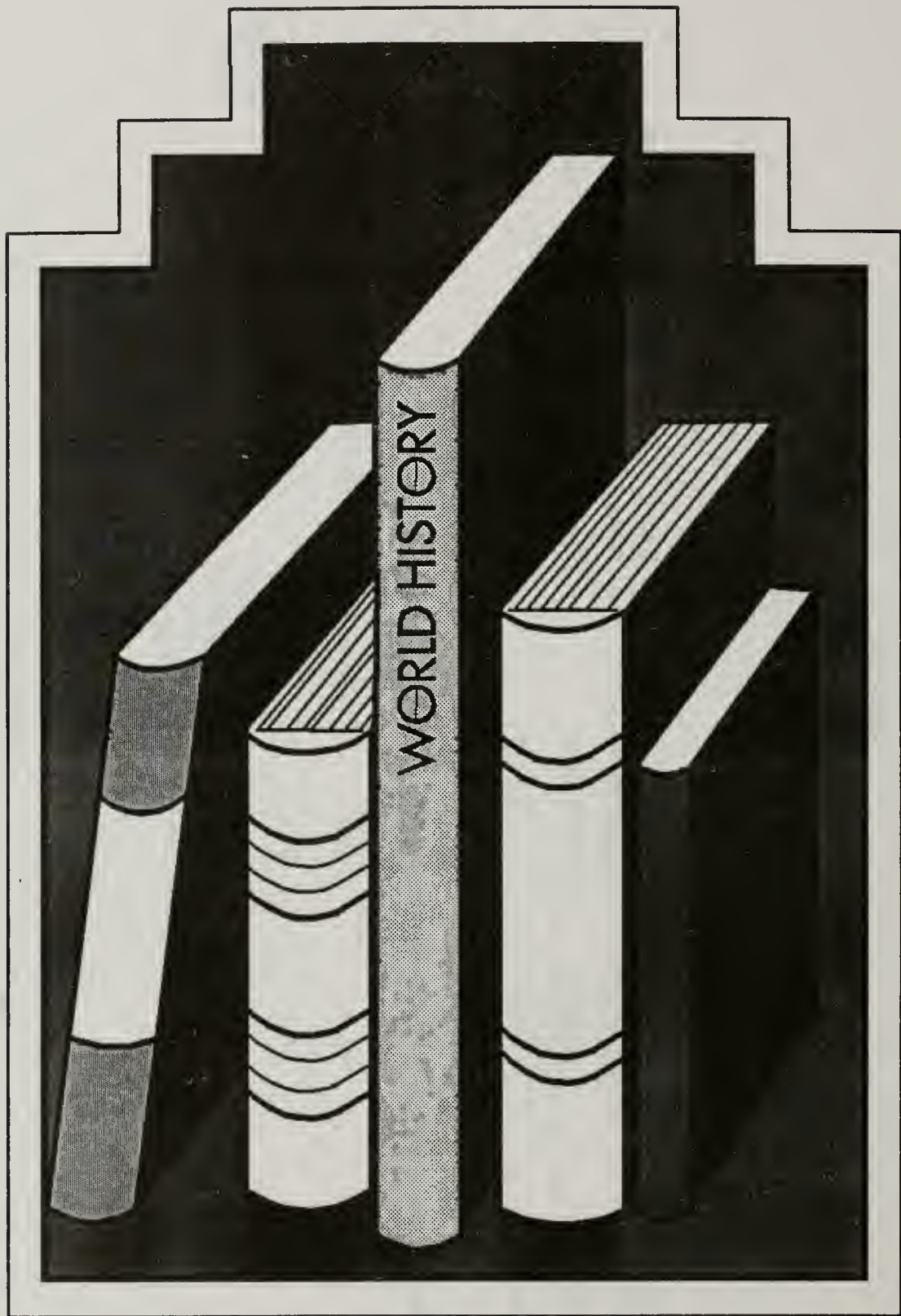
Teachers' Retirement System

Table D-2

Contribution Rates

Valuation Date (July 1)	Normal Cost Rate		UAL Rate	Total Employer Rate	Total Rate
	Employee	Employer			
1989*	7.044%	1.783%	5.676%	7.459%	14.503%
1992	7.044%	2.832%	4.627%	7.459%	14.503%

*Valuation performed by Hendrickson, Miller & Associates, Inc.



STATISTICAL SECTION

REVENUES BY SOURCE

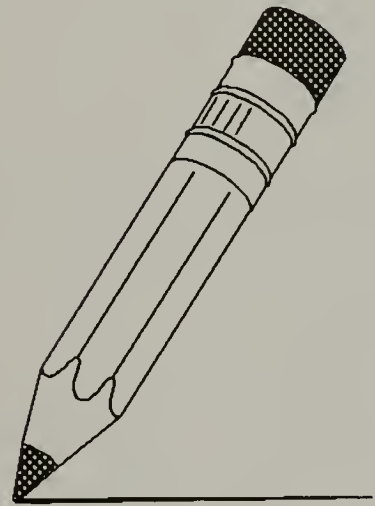
EXPENSES BY TYPE

CONTRIBUTION RATES

ACTIVE MEMBERSHIP

RETIRED MEMBERSHIP

LOCATION OF BENEFIT RECIPIENTS



Revenues By Source

<u>Year</u>	<u>Employee Contributions</u>	<u>Employer Contributions</u>	<u>Investment Income</u>	<u>Other</u>	<u>Total</u>
1982 - 1983	\$20,786,014	\$20,158,344	\$25,916,847		\$66,861,205
1983 - 1984	25,018,366	24,103,285	30,338,736		79,460,387
1984 - 1985	26,630,671	26,104,746	35,357,881		88,093,298
1985 - 1986	27,603,165	27,322,124	45,404,420		100,329,709
1986 - 1987	28,883,825	28,401,842	48,820,651		106,106,318
1987 - 1988	28,800,383	28,324,488	51,877,012		109,001,883
1988 - 1989	28,995,301	28,657,283	58,742,650		116,395,234
1989 - 1990	30,549,466	30,646,428	63,748,295		124,944,891
1990 - 1991	32,611,152	33,274,827	67,033,563		132,919,542
1991 - 1992	34,677,311	35,759,120	70,680,973		141,117,424

Expenses By Type

<u>Year</u>	<u>Benefit Payments</u>	<u>Withdrawals</u>	<u>Admin. Expenses (1)</u>	<u>Investment Expenses</u>	<u>Other (2)</u>	<u>Total</u>
1982 - 1983	\$25,957,774	\$3,405,461	\$320,960	\$93,422	\$372,869	\$30,105,768
1983 - 1984	28,791,213	4,230,672	489,981	100,580	493,322	34,105,768
1984 - 1985	32,498,499	4,812,090	334,023	104,330		37,748,942
1985 - 1986	37,633,013	4,647,911	378,827	133,979		42,793,730
1986 - 1987	40,292,222	4,807,517	442,966	125,607		45,668,312
1987 - 1988	44,001,287	6,994,554	443,786	310,975		51,750,602
1988 - 1989	47,214,491	5,213,596	474,560	179,743		53,082,390
1989 - 1990	51,033,464	8,561,498	520,926	166,134		60,282,022
1990 - 1991	54,869,861	4,243,421	485,918	191,692		59,790,892
1991 - 1992	60,763,611	3,307,312	684,415	180,920		64,936,258

(1) Includes depreciation after fiscal year 1984

(2) Includes prior year adjustments and depreciation through 1984

Teachers' Retirement System

Contribution Rates

EMPLOYEE

1937 - 1973	5.000%
1973 - 1975	5.125%
1975 - 1977	6.125%
1977 - 1983	6.187%
1983 - 1992	7.044%

EMPLOYER

1937 - 1945	NONE
1945 - 1959	3.750%
1959 - 1969	4.000%
1969 - 1971	4.500%
1971 - 1973	5.125%
1975 - 1977	6.250%
1977 - 1981	6.312%
1981 - 09/30/81	6.432%
10/01/81 - 06/30/83	6.463%
1983 - 1985	7.320%
1985 - 1989	7.428%
1989 - 1992	7.459%

Unless otherwise noted, contribution rate changes occur on July 1.

Teachers' Retirement System

Membership

<u>Period Ended</u>	<u>Active Members</u>	<u>Inactive Vested Members</u>	<u>Inactive Non-vested</u>	<u>Total</u>
June 30, 1983	14,934	723	2,051	17,708
June 30, 1984	15,214	748	2,148	18,110
June 30, 1985	15,579	715	2,245	18,238
June 30, 1986	15,951	695	2,362	19,008
June 30, 1987	15,084	964	3,090	19,138
June 30, 1988	15,041	1,025	3,444	19,510
June 30, 1989	15,087	1,074	3,765	19,926
June 30, 1990	15,702	1,137	4,080	20,919
June 30, 1991	16,281	1,102	4,469	21,852
June 30, 1992	16,643	1,167	4,890	22,700

Retired Members and Benefit Recipients

<u>Period Ended</u>	<u>Retirement</u>	<u>Survivors</u>	<u>Disability</u>	<u>Child Benefits</u>	<u>Total</u>
June 30, 1983	4,451	279	227	42	4,999
June 30, 1984	4,653	294	227	46	5,220
June 30, 1985	4,936	302	235	51	5,524
June 30, 1986	5,158	311	239	58	5,766
June 30, 1987	5,295	311	245	58	5,909
June 30, 1988	5,475	320	249	59	6,103
June 30, 1989	5,743	332	255	59	6,389
June 30, 1990	5,903	334	265	56	6,558
June 30, 1991	5,882	339	261	46	6,528
June 30, 1992	5,984	685	211	47	6,927

Teachers' Retirement System

Location of Benefit Recipients

Alabama	6	New Jersey	2
Alaska	19	New Mexico	24
Arizona	146	New York	15
Arkansas	7	North Carolina	10
California	172	North Dakota	75
Colorado	55	Ohio	7
Connecticut	5	Oklahoma	10
District of Columbia	1	Oregon	121
Florida	27	Pennsylvania	6
Georgia	6	South Carolina	5
Hawaii	5	South Dakota	24
Idaho	76	Tennessee	9
Illinois	9	Texas	37
Indiana	7	Utah	32
Iowa	9	Virginia	10
Kansas	12	Washington	250
Kentucky	2	West Virginia	2
Louisiana	1	Wisconsin	19
Maine	3	Wyoming	50
Maryland	5	Australia	1
Massachusetts	5	Canada	11
Michigan	9	China	2
Minnesota	52	Denmark	1
Missouri	18	Puerto Rico	1
Montana	5,267	Scotland	<u>1</u>
Nebraska	6		
Nevada	41	Total	<u>6,696</u>



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